ANC

EASY TRICKS WITH NUMBERS

25¢

0 × 9 + 1 = 1
1 × 9 + 2 = 11
12 × 9 + 3 = 111
123 × 9 + 4 = 1111
1234 × 9 + 5 = 11111

108 TRICKS FOR AGES 9 TO 90

EASY TRICKS with
NUMBERS

A Collection of More Than 100
Fascinating Number Tricks and
Other Interesting Recreations

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PREFACE

This book contains many interesting number tricks and other recreations. The material has been compiled from many sources. Some of it has been known and used for centuries. Many of the recreations, such as magic squares, have a long and interesting history.

To enjoy this book you need no mathematical knowledge or skill except the ability to add, subtract, multiply, and divide. In the latter part of the book, the tricks and recreations are explained.

This book will open the door for you into the magic world of numbers. Enjoy these tricks with your friends.

EASY TRICKS WITH NUMBERS

NUMBER 1

Tell a friend to choose any number and to add 9 to it. Have him multiply this result by 2 and then subtract 4 and divide the remainder by 2. Tell him to subtract the number that he first selected and you can, without asking him any questions, at once tell his result.

(See page 31)

NUMBER 2

Ask someone to write down the year of his birth. Tell him to write under this a year when some interesting event in his life occurred. Now tell him to write under this his age in years at the time of his birthday this year. Under this have him write the number of years that have passed since the occurrence of the interesting event in his life. Tell him to add the four numbers. You can then at once tell him the entire sum, without asking him any questions, even though you know none of the four numbers which he added.

(See page 31)

NUMBER 3

Tell a friend to select any number of three or more figures and after dividing the number by 9 to tell you the remainder. Now tell him to cross out any figure of his original number except a 9 and to divide the resulting number by 9, and to tell you the remainder. You can then tell him what figure he crossed out.

(See page 31)

NUMBER 4

Tell a friend to select a number made up of 3 different figures, the first and last of which differ by at least 2. For example, he may select 743. Ask him to reverse the figures of his number. If he first selected the number 743 he will have 347 when he reverses the figures of the number. Now tell him to subtract the smaller number from the larger and then to reverse the figures of this difference. Have him add this last number and the difference as it was before its figures were reversed. You can now tell him his result even though he gives you no information whatever.

(See page 31)

NUMBER 5

What is the difference, if any, between six dozen dozen and half a dozen dozen?

(See page 31)

NUMBER 6

Ask each person in a group to write down any number of two or three figures, all of which are different. Have each one reverse the figures which he first wrote and subtract the smaller number from the larger. Now ask each one to multiply this difference by any whole number that he cares to select. Tell each one to cross out any figure in the result except a zero. Now ask each member of the group to tell you the sum of the remaining figures in his result and you can tell him what figure he crossed out.

(See page 31)

NUMBER 7

Ask a person to select two numbers, each of which is less than 10. Tell him to choose either of the numbers and to multiply it by 5. Tell him to add 7 to this result. Ask him to multiply the resulting sum by 2 and then have him add to this the other number that he first selected. Ask him to tell you the result and you can tell him at once the two numbers which he chose and also the one which he multiplied by 5.

(See page 32)

NUMBER 8

Does a farm which has an area of a square mile necessarily have the same shape as a farm which is a mile square?

(See page 32)

NUMBER 9

Tell a friend to write down any number of 3 figures all of which are different. From this have him subtract the sum of the figures of the number which he first wrote. Ask him to cross out any figure in this result except a zero. Have him tell you the sum of the remaining figures in his answer and you can tell him at once what figure he crossed out.

(See page 32)

NUMBER 10

A man had a window two feet square. He boarded up half of the window and still had a square window two feet across and two feet from top to bottom. Show by a drawing how this was possible.

(See page 32)

NUMBER 11

Which statement is correct, "five and seven *is* eleven" or "five and seven *are* eleven"?

(See page 32)

NUMBER 12

AN AGE TRICK

Ask someone to write down the number of the day of the month on which he was born (for example, he may write 27). Tell him to multiply the number that he has just written by 2 and then to add 3 to this product. Now tell him to multiply this result by 50 and to add to this the number of the month in which he was born. (For example, a person born in April would add 4.) Now tell him to add 5 and to multiply this result by 100. Next tell him to add his age in years at the time of his last birthday. Ask him to tell you the result and you can then tell him not only his age in years but the month and the day of the month on which he was born.

(See page 33)

NUMBER 13

Ask a friend to write down any number greater than 1 but not greater than 10. Tell him that to this number you will add a number not greater than 10. To this sum your friend will then add any number not greater than 10, and so proceeding each in turn adding a number not greater than 10 to the preceding sum, you will always reach exactly 100 first, although your friend has the advantage of selecting the original number.

(See page 34)

NUMBER 14

Have a person write down a number of 3 different figures using no zeros. Tell him to reverse the order of the figures in the number that he wrote and then to subtract the smaller of the two numbers from the larger. Ask him to tell you the right-hand figure of the difference between the two numbers and you can at once tell him the entire difference.

(See page 34)

NUMBER 15

Ask a friend what figure from 1 to 9 inclusive he thinks he makes most poorly. After he has named a figure, tell him that you will see to it that he has practice making that figure.

Have him write down the number 12345679 and ask him to multiply it by 9 times the number that he named. For example, if he said, "I make the figure 7 most poorly," then ask him to multiply 12345679 by 63. He will find the result very interesting.

(See page 34)

NUMBER 16

Tell a friend to choose any number and after adding 5 to it to multiply this result by 3. Now tell him to subtract 9, and divide the remainder by 3. Tell him to subtract the number that he first selected, and you can, without asking any questions, at once tell his result.

(See page 34)

NUMBER 17

INSTANTANEOUS ADDITION

Ask a friend to write in a column 3 large numbers, each of which has the same number of figures. Tell him that all of the figures of a given number should be different. After he has written his three numbers, you write under them two numbers. You can then write instantly the sum of all of his numbers and yours.

For example, if your friend writes the first three numbers shown in any of the illustrations below, then you write the next two numbers as shown and you can write the sum of all of the numbers instantly.

I	II	III
7483	37468	8756431
2697	76952	2695384
8514	89437	7839652
7302	23047	7304615
1485	10562	2160347
27481	237466	28756429

(See page 35)

NUMBER 18

a. Try to find a number less than 150 which is equal to one-half the sum of all of the smaller numbers which are its exact divisors.

b. Try to find a number larger than 500 and less than 700 which is equal to one-half the sum of its exact divisors. *(See page 36)*

NUMBER 19

How much dirt is there in a hole a foot long, a foot wide, and a foot deep?

(See page 36)

Can you find what the missing figures are in each of the following examples?

NUMBER 20

$$\begin{array}{r}748*\\274\\8*06\\*2*8\\\hline 25521\end{array}$$

NUMBER 21

$$\begin{array}{r}48*7\\*964\\8*32\\768*\\\hline 25272\end{array}$$

(See page 36)

NUMBER 22

$$\begin{array}{r}29*\\7*42\\*279\\87*5\\\hline 19398\end{array}$$

NUMBER 23

$$\begin{array}{r}4876\\\times\ 3*7\\\hline 34132\\****\\14628\\\hline 1594452\end{array}$$

NUMBER 24

$$\begin{array}{r}79*4\\\times\ 527\\\hline 55888\\15968\\39920\\\hline 4207568\end{array}$$

(See page 36)

NUMBER 25

$$\begin{array}{r}*59*\\\times\ 345\\\hline 37990\\30392\\22794\\\hline 2621310\end{array}$$

NUMBER 26

$$\begin{array}{r}8*98*\\-\ *27*8\\\hline 52189\end{array}$$

NUMBER 27

$$\begin{array}{r}*86*\\-\ 3**7\\\hline 4567\end{array}$$

(See page 37)

NUMBER 28

$$\begin{array}{r}8**6\\-\ 398*\\\hline 4776\end{array}$$

NUMBER 29

Ask a friend to write down any number and to multiply it by 2, and then add 10. Now ask him to divide the result by 2. Tell him to subtract the number that he first selected. Tell him that you now know without asking any questions what his answer is.

(See page 37)

NUMBER 30

How much is $3 \div 3 \div 3 \div 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 0$?

(See page 37)

Can you write the next 4 lines of these three interesting tables?

NUMBER 31

$1 \times 9 + 1 = 10$
$12 \times 9 + 2 = 110$
$123 \times 9 + 3 = 1110$
$1234 \times 9 + 4 = 11110$

NUMBER 32

$1 \times 9 + 2 = 11$
$12 \times 9 + 3 = 111$
$123 \times 9 + 4 = 1111$
$1234 \times 9 + 5 = 11111$

(See page 37)

NUMBER 33

$1 \times 8 + 1 = 9$
$12 \times 8 + 2 = 98$
$123 \times 8 + 3 = 987$
$1234 \times 8 + 4 = 9876$

(See page 37)

NUMBER 34

How much is $4 + 4 \times 4 - 4 \div 4 - 4$?

(See page 37)

NUMBER 35

How much is $5 \div 5 \div 5 \div 5 \div 5 \times 0$?

(See page 37)

NUMBER 36

$5 \div 5 \div 5 \div 5 \div 5 \div \frac{1}{5} \div \frac{1}{5} \div \frac{1}{5} = ?$

(See page 37)

NUMBER 37

MAKING MAGIC SQUARES

Try to arrange the numbers from 1 to 9 inclusive in a square so that the sum of the 3 numbers in each row, in each column, and along each diagonal shall be 15. Use each number only once. *(See page 38)*

NUMBER 38

Arrange the numbers from 1 to 16 inclusive in a square in such a way that the sum of the four numbers in each row, in each column, and along each diagonal shall be 34. Use each number only once. *(See page 38)*

NUMBER 39

Arrange the numbers from 1 to 25 inclusive in a square so that the sum of the numbers in any row, in any column, and along each diagonal shall be 65. Use each number only once. *(See page 38)*

NUMBER 40

Arrange the numbers from 1 to 36 inclusive in a square so that the sum of the numbers in any row, in any column, and along each diagonal, shall be 111. Use each number only once. *(See page 38)*

NUMBER 41

Can you place 4 fives in such a way that the value expressed will be exactly 56?

(See page 38)

NUMBER 42

THE MAGIC TABLES

Have each of several persons choose a number from 1 to 63 inclusive and ask each to tell you the groups below in which his number is found. You can then immediately tell each person what number he chose.

If, for example, someone says, "My number is in the first, third, fourth, and fifth groups", you will at once tell him that he chose the number 29.

Group I	Group II
1- 3- 5- 7- 9-11-13-15	2- 3- 6- 7-10-11-14-15
17-19-21-23-25-27-29-31	18-19-22-23-26-27-30-31
33-35-37-39-41-43-45-47	34-35-38-39-42-43-46-47
49-51-53-55-57-59-61-63	50-51-54-55-58-59-62-63

Group III	Group IV
4- 5- 6- 7-12-13-14-15	8- 9-10-11-12-13-14-15
20-21-22-23-28-29-30-31	24-25-26-27-28-29-30-31
36-37-38-39-44-45-46-47	40-41-42-43-44-45-46-47
52-53-54-55-60-61-62-63	56-57-58-59-60-61-62-63

Group V	Group VI
16-17-18-19-20-21-22-23	32-33-34-35-36-37-38-39
24-25-26-27-28-29-30-31	40-41-42-43-44-45-46-47
48-49-50-51-52-53-54-55	48-49-50-51-52-53-54-55
56-57-58-59-60-61-62-63	56-57-58-59-60-61-62-63

(See page 39)

NUMBER 43

Ask a friend to choose any number and to multiply it by 6. Tell him to add 5 to this result. Now ask him to multiply his last result by 3. Tell him to add 2 and then to subtract 18 times the number that he first selected. You can, then, at once tell him what his answer is.

(See page 39)

NUMBER 44

If the number 142857 is multiplied by 2, 3, and 4, the numbers in the product appear in the same order as in the original number, as shown below.

$$\begin{array}{r} 142857 \\ \times 2 \\ \hline 285714 \end{array} \qquad \begin{array}{r} 142857 \\ \times 3 \\ \hline 428571 \end{array} \qquad \begin{array}{r} 142857 \\ \times 4 \\ \hline \end{array}$$

Is this true when 142857 is multiplied by 5? by 6? by 7? by 8? by 9?

(See page 39)

NUMBER 45

Which is heavier, a pound of feathers or a pound of gold?

(See page 39)

NUMBER 46

Ask a friend to think of any small number. Tell him to multiply it by 2, and then add 12. Now tell him to divide the result by 2 and then to subtract the number that he first thought of. You can, without asking any questions, tell him his answer.

(See page 39)

NUMBER 47

Ask any one to think of any small number. Tell him to multiply it by 3 and then to add 6. Now tell him to divide the result by 3 and then to subtract the number that he first thought of. You can immediately tell him his answer.

(See page 39)

NUMBER 48

How much is 9 × 8 × 7 × 6 × 5 × 4 × 3 × 2 × 1 × 0?

(See page 39)

NUMBER 49

Ask each of several friends to write any number of 3 figures such that each figure is 1 less than the figure to its left. Now ask each one to reverse the order of the figures in his number and to subtract the second number from the first. You can then tell each one what his answer is without asking any questions.

(See page 40)

NUMBER 50

A boy gave some cookies to each of his three brothers. To the oldest he gave half of the cookies and half a cookie. He then gave half of what he had left and half a cookie to the second brother. Finally he gave half of what he then had left and half a cookie to his youngest brother. He then had no cookies left. At no time was a cookie broken, cut or divided. How many did he have at first?

(See page 40)

NUMBER 51

Can you answer both of the following questions correctly?

a. How many half-inch squares would make an inch square?

b. If you had a hollow cube, the inside of which measured an inch in length, width, and height, how many half-inch cubes could be placed in it?

(See page 40)

NUMBER 52

If it takes 1 minute to make each cut, how long will it take to cut a 10-foot pole into 10 equal pieces?

(See page 40)

NUMBER 53

As the term is used in the United States, a billion means a thousand million and is written 1,000,000,000.

If members of a large group were to take turns counting at the rate of 2 per second and the counting should continue at this rate would the count have reached a billion at the end of a week? At the end of a month of 31 days? At the end of a year of 365 days?

(See page 40)

NUMBER 54

Using only the nine figures 1, 2, 3, 4, 5, 6, 7, 8, and 9 write a number such that when a certain other number made up of these same nine figures is subtracted from it the difference will be a number which is also made up of these same nine figures.

(See page 40)

NUMBER 55

Tell a friend to think of a number and multiply it by 4. Tell him to add to this product any small even number that you mention. (For example, 4, 6, or 8.) Then tell him to take ½ of this sum and to tell you the result. You can at once tell him the number that he first thought of.

(See page 40)

NUMBER 56

If you had only a 3-gallon measure and a 5-gallon, could you measure out exactly 4 gallons of water? If so, how would you do it?

(See page 40)

NUMBER 57

Using only the nine figures 1, 2, 3, 4, 5, 6, 7, 8, and 9 write three numbers of three figures each such that the first number shall be three times as large as the third number and the second number shall be the difference between the first and third numbers.

(See page 40)

NUMBER 58

Tell each of several friends to write a number of 4 figures each of which is 1 less than the figure to its left. Now tell each to reverse the number which he just wrote and to subtract the resulting number from the first number. You can, without asking any questions, tell each one what his answer is.

(See page 40)

NUMBER 59

A boy paid $1.25 for a ball and a bat. The ball cost 25 cents more than the bat. How much did each cost?

(See page 40)

NUMBER 60

INSTANTANEOUS ADDITION

Ask a friend to write 5 numbers of 4 figures each. Tell him that you will write under these 5 other numbers of 4 figures each and that you will then write instantly the sum of the 10 numbers.

(See page 41)

NUMBER 61

Ask a friend to hold an even number of marbles, pennies, or coins in one hand and an odd number in the other but not to let you know the number in either hand.

Tell him to multiply the number in his right hand by 3 and the number in his left hand by 2. Ask him to add these two products and to tell you whether the sum is an even or an odd number. You can then tell him in which hand he held the even number of objects.

(See page 41)

NUMBER 62

Ask a friend to write down any number containing four, five, or six figures. Tell him to add the figures and to subtract this sum from the first number that he wrote down. Now tell him to cross out any figure in the result except a zero and to tell you the sum of the remaining figures. You can instantly tell him what figure he crossed out.

(See page 41)

NUMBER 63

A snail starts at the bottom of a well 16 feet deep and crawls up 4 feet each day and slips back 3 feet each night. How long will it take the snail to reach the top of the well?

(See page 41)

NUMBER 64

A train leaves New York for Philadelphia and travels at the rate of 25 miles an hour. At the same time a train leaves Philadelphia for New York and travels on a parallel track at the rate of 50 miles an hour. When the two trains meet which is nearer New York?

(See page 41)

NUMBER 65

What number when divided by 4 gives the same result as when 4 is subtracted from the number?

(See page 41)

NUMBER 66

A man drove his automobile from his home to his office at an average rate of 25 miles an hour. He then drove from his office to his home over the same road at an average rate of 35 miles an hour. What was the average rate for the round trip?

(See page 41)

NUMBER 67

Place eight toothpicks or matches, four of them being just half as long as the other four, so that these eight pieces will form three equal squares.

(See page 42)

NUMBER 68

A man has five pieces of chain each of which is made up of three links. He wishes to have one chain made using the five pieces. A blacksmith agrees to charge 4 cents for cutting a link and 5 cents for welding a link. What is the least amount for which the cutting and the welding can be done?

(See page 42)

NUMBER 69

Multiply 37 by each of the following numbers: 3-6-9-12-15-18-21-24 and 27. You will get very interesting results.

(See page 42)

NUMBER 70

. Ask a friend to write a number of 5 or 6 figures. Tell him that you can, without first dividing his number by 9, place either before or after his number, a figure that will make the entire number exactly divisible by 9.

For example, if your friend writes the number 283745, you place a 7 either before or after his number and you have 7283745 or 2837457. Each of these numbers is exactly divisible by 9.

(See page 42)

NUMBER 71

Ask a friend to write a large number, such as 358721, and tell him that you can, without making the division, tell him whether his number is exactly divisible by 9. If it is not exactly divisible by 9, you can, without making the division, tell him the remainder when the number is divided by 9.

(See page 42)

NUMBER 72

Ask someone to write a large number and then tell him that you can, without making the division, tell him at once whether his number is exactly divisible by 11.

(See page 43)

NUMBER 73

Ask a friend to throw two dice until he has thrown two different numbers. Tell him to double the number on one of the dice and add 5. Tell him to multiply this sum by 5 and add the number on the other dice to this product. Ask him to tell you the result. You can then tell him the numbers on the two dice and which number he multiplied by 2.

(See page 43)

NUMBER 74

Ask a friend to write down any number of four figures, all of which are different. For example, he might select 7384. Now tell him to write another number of four figures using these same four figures. For example, if he first wrote 7384, he may now write 3478 or 8347. Tell him to subtract the smaller number from the larger. Now ask him to find the sum of the figures in his result. If this sum contains two or more figures tell him to add these figures and to continue doing this until he has a result of one figure. Now tell your friend to add 5 to this one-figure result. Ask him then to add to this the two right-hand figures of the year that he was born and to tell you his result. You can immediately tell him the year of his birth.

(See page 43)

NUMBER 75

Place the numbers from one to nine inclusive in a square, using each number but once, in such a way that if you add the three-figure number in the top row to that in the second row the sum will be the number in the third row.

(See page 43)

NUMBER 76

Can you write the next three lines in this arrangement without making the multiplications?

11 × 11 = 121
111 × 111 = 12321
1111 × 1111 = 1234321
11111 × 11111 = 123454321
111111 × 111111 = 12345654321

(See page 44)

NUMBER 77

Can you write the next five lines in this arrangement without making the multiplications and additions?

9 × 9 + 7 = 88
9 × 98 + 6 = 888
9 × 987 + 5 = 8888

(See page 44)

NUMBER 78

Can you write the next five lines for the arrangement below?

12345679 × 9 = 111111111
12345679 × 18 = 222222222
12345679 × 27 = 333333333
12345679 × 36 = 444444444

(See page 44)

NUMBER 79

Can you write the next two lines for the arrangement below?

$$\begin{array}{r}
1+2+1=\ 4\\
1+2+3+2+1=\ 9\\
1+2+3+4+3+2+1=16\\
1+2+3+4+5+4+3+2+1=25\\
1+2+3+4+5+6+5+4+3+2+1=36\\
1+2+3+4+5+6+7+6+5+4+3+2+1=49
\end{array}$$

(See page 44)

NUMBER 80

Can you write the next two lines for the arrangement below?

$$\begin{array}{r}
1^2=1\\
11^2=121\\
111^2=12321\\
1111^2=1234321\\
11111^2=123454321
\end{array}$$

(See page 44)

NUMBER 81

Numbers which are exactly divisible by 2 without a remainder are called *even* numbers. For example, 4, 16, and 24 are even numbers.

Numbers which cannot be divided by 2 without a remainder are called *odd* numbers. For example, 5, 15, and 23 are odd numbers.

Using only odd numbers write a number which is equal in value to an even number.

(See page 44)

NUMBER 82

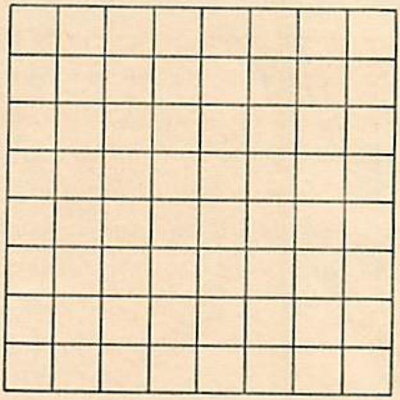
How can you take one from 29 and have 30 left?

(See page 44)

NUMBER 83

A LARGE MAGIC SQUARE

Write the numbers from 1 to 64 inclusive in a square so that the sum of the numbers in any row, in any column, or along either diagonal will be 260. Use each number only once.



(See page 44)

NUMBER 84

Ask a friend to tell you the sum of the numbers below without adding them.

$1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19$

(See page 45)

NUMBER 85

Ask someone to tell you the sum of the numbers below without adding them.

$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15$

(See page 45)

NUMBER 86

Place the numbers from 1 to 9 inclusive in a square using each number only once, in such a way that the three-figure number in the second row is twice the number in the top row and the number in the third row is three times the number in the top row.

(See page 45)

In the tricks numbered 87-89 which follow, you are to so arrange the cards that you use that when they are held face down in your hand and the top card is placed on a table face up, and the second card is then placed on the bottom of the pack in your hand, and the third card is placed on the table face up, and the fourth card is placed on the bottom of the pack, etc., the cards that are placed on the table will be in certain sequences.

NUMBER 87

Using only the Ace, King, Queen, and Jack of each of the four suits, arrange these 16 cards in such a way that when the procedure described above is followed the cards placed on the table will appear in the following sequence:

Ace (Spades), Ace (Hearts), Ace (Diamonds), Ace (Clubs), King (S), King (H), King (D), King (C), Queen (S), Queen (H), Queen (D), Queen (C), Jack (S), Jack (H), Jack (D), Jack (C).

(See page 45)

NUMBER 88

Using all of the Spades and Hearts in the deck, arrange the 26 cards so that when the procedure described above is followed the cards placed on the table will appear in the following order: Ace (S), Ace (H), King (S), King (H), Queen (S), Queen (H), Jack (S), Jack (H), 10 (S), 10 (H), 9 (S), 9 (H), etc.

(See page 45)

NUMBER 89

Using all of the deck, arrange the 52 cards so that when the procedure described on page 26 is followed the cards of each of the four suits will appear on the table in the order of their value in the suit, all 13 spades appearing, then the 13 hearts, followed by the 13 diamonds, and the 13 clubs.

(See page 46)

NUMBER 90

Ask a friend to choose any number made up of 4 figures and such that each figure of the number is less than the figure immediately to its left. For example, your friend might choose 7542. Now tell him to reverse the order of the figures in his number. For example, if he first chose the number 7542 he would have 2457 when he reversed the order of the figures. Tell him to subtract the smaller of his 2 numbers from the larger. Now tell him to reverse the order of the figures in the result which he just got and to add the resulting number to the number he had just before he reversed its figures. Tell him that you can, without asking any questions, tell him his final answer.

(See page 46)

NUMBER 91

If a dog weighs 36 pounds when standing on 3 legs, how much will the dog weigh when standing on four legs?

(See page 46)

NUMBER 92

Tell someone to select any hour shown on the face of a watch but not to tell you the hour selected. Now take out your watch, lay it with the face up and tell your friend that as you tap your pencil over certain numbers shown on the face he is to count the taps silently but is to begin with the number which he selected and count up from there. For example, if he selected the number 5, he would count your first tap as 6, the second tap as 7, etc. Tell him to say "Stop" when his count reaches 20 and that you will tell him which hour he selected.

(See page 46)

NUMBER 93

Assign the following values: ace = 1, 2 spot = 2, 3 spot = 3, etc. Each face card = 10.

While you are not looking, have a friend take some cards from a shuffled deck of 52 cards. Ask him to put down face up a few of the cards that he has taken and then to place on each of these cards enough other cards to make the number in each pile total 12, counting as follows: for example, if he puts down a 7 face up he will then put 5 other cards on it. If he puts down a Jack, he will put 2 other cards on it. If he puts down an ace, he will put 11 other cards on it.

Ask your friend to give you all of the cards not used in making these piles and you can, without looking at the faces of the cards that are left in the deck, tell him the sum of the points on all of the bottom cards in the piles which he made.

(See page 46)

NUMBER 94

The sum of the numbers shown in line "a" below is 45. Try to combine these first 9 numbers so that the value expressed shall be equal to 100.

a. $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 = 45$

(See page 47)

Can you find what the missing figures are in each of the examples below?

NUMBER 95

```
       87
** | 6612
     ***
     ----
      **2
      ***
      ---
```

NUMBER 96

```
          42
327 | *****
       1308
       ----
        ***
        ***
        ---
```

NUMBER 97

```
   738
    5*
  ----
  1476
 3690
 -----
 38376
```

(See page 47)

NUMBER 98

```
       403
** | 11284
     ***
     -----
        84
        **
        --
```

NUMBER 99

```
  5*09
- *6**
  ----
  3160
```

NUMBER 100

```
  8**9
    *8
 -----
 64072
4**45
------
4**522
```

(See page 47)

NUMBER 101

```
        **
5*  ) 1***
       *5*
      ----
       ***
       400
      ----
```

NUMBER 102

```
          63
748  ) *****
        4488
       -----
        ****
        ****
       -----
```

NUMBER 103

```
 568
 7*4
 *7*
  96
----
1991
```

(See pages 47 and 48)

NUMBER 104

```
        74
**  ) 6586
      ***
      ----
       **6
       ***
      ----
```

NUMBER 105

```
  348
   **
-----
 1740
****
-----
12180
```

NUMBER 106

```
 ***
  26
----
2304
***
----
***4
```

(See page 48)

NUMBER 107

The area of a window which is one-half a yard square is what fractional part of the area of a window that contains one-half a square yard?

(See page 48)

NUMBER 108

What number is as much greater than 36 as it is less than 94?

(See page 48)

HOW TO DO IT

1. The result will always be 7, no matter what number was chosen.

2. The entire sum will always be twice the present year. For example, if you are using this number trick in 1944, the answer will be 2×1944 or 3888. If you are using it in 1948, the answer will be 2×1948 or 3896.

3. If your friend's second remainder is less than the first, the figure which he crossed out is the difference between the two remainders. If the second remainder is greater than the first, to find the figure which he crossed out find the difference between the two remainders and subtract this difference from 9.

For example, if the first remainder is 7 and the second is 4, the figure crossed out was $7 - 4$, or 3.

If the first remainder is 2 and the second is 8, to find the figure crossed out first subtract 2 from 8. This gives a remainder of 6; then subtract 6 from 9. $9 - 6 = 3$, so the figure crossed out was 3.

4. The sum will always be 1089, no matter what number was first chosen.

5. Six dozen dozen is $6 \times 12 \times 12$ or 864. Half a dozen dozen is 6×12 or 72. $864 - 72 = 792$. The difference is therefore, 792.

6. Each person will give you a certain result. Subtract this number from the next larger number which exactly contains 9; the difference between these two numbers is the number that he crossed out.

For example, if someone says, "My result is 14," you subtract 14 from 18, which is the next larger number that exactly contains 9, and say, "You crossed out a 4." If he says, "My result is 25", you subtract 25 from 27, the next number larger than 25 which exactly contains 9, and say, "You crossed out a 2".

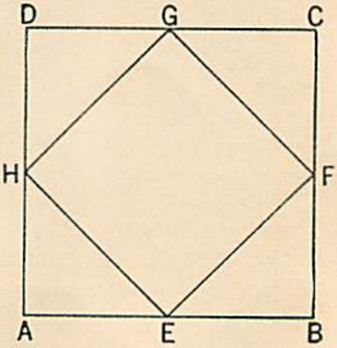
7. From whatever result the person gives you, subtract 14. You will then have a number of two figures. The two figures of this number are the two numbers which the person selected, and the figure in ten's place, that is the left-hand figure, is the one which he multiplied by 5.

For example, if he says, "My result is 88", you subtract 14 from 88. The result is 74. The two numbers which he chose were, therefore, 7 and 4, and, since 7 is the ten's figure of 74, it is the number which he multiplied by 5.

8. Not necessarily. A farm which is a mile square *must* be in the shape of a square, each side of which is 1 mile. A farm which has an area of a square mile may have any shape. For example, a farm in the shape of a rectangle, ½ mile wide and 2 miles long would have an area of 1 square mile but it would not be a mile square.

9. Your friend will tell you his result. Subtract this result from the next larger number which exactly contains 9 and the remainder will be the figure which he crossed out.

10. ABCD represents the original square window and EFGH represents the square window after half of the original window is boarded up.



11. Neither statement is correct because 5 + 7 = 12.

12. To find the age, proceed as follows:

Subtract 15,500 from whatever result the person gives you. The two right-hand figures of this result will tell you the person's age; the next two figures will tell you the number of the month in which he was born; and the next one or two figures will tell you the day of the month in which his birthday occurs.

For example, if a person were born April 17 and is now 36 years of age, his computation would appear as follows:

$$\begin{array}{r} 17\\ 2\\ \hline 34\\ 3\\ \hline 37\\ 50\\ \hline 1850\\ 4\\ \hline 1854\\ 5\\ \hline 1859\\ 100\\ \hline 185900\\ 36\\ \hline 185936 \end{array}$$

This person would say, "My result is 185936."

From this number you subtract 15500.

$$\begin{array}{r} 185936\\ -15500\\ \hline 170436\\ \hline \end{array}$$

The two right-hand figures tell you that his age is 36. The next two figures tell you that he was born the fourth month (April), and the next two figures tell you that he was born on the 17th day of the month.

If a person said, "My result is 86523", you subtract 15,500 from this result.

$$\begin{array}{r} 86523\\ 15500\\ \hline 7\ 10\ 23\\ \hline \end{array}$$

This result shows that the person was born on the 7th day of the 10th month (October) and is 23 years of age.

13. No matter what number your friend writes first, you write 12 as your first number. No matter what he writes as his second number, write 23 as your second number. No matter what he writes next, you write 34. In other words, the numbers which you write are as follows: 12, 23, 34, 45, 56, 67, 78, 89. Note that the first number which you write is 12, and each number which you write after that is 11 more than the last number that *you* wrote.

14. The ten's figure of the person's answer will always be 9. To find the hundred's figure, if any, of the answer, simply subtract the number which he tells you from 9. For example, suppose he says, "the right hand figure of the difference is 4". You subtract 4 from 9 and get 5. This is the hundreds' figure of his entire difference. Therefore, his entire difference is 594. If the right-hand figure of his difference is 2, the entire difference is 792. If the right-hand figure of his difference is 9, his entire difference is 99.

15. If your friend says, "I make the figure 7 most poorly", ask him to multiply the number 12345679 by 63. If he says, "I make the figure 4 most poorly", ask him to multiply the number 12345679 by 36. The results in these two cases are shown below.

$$\begin{array}{r} 12345679 \\ 63 \\ \hline 37037037 \\ 74074074 \\ \hline 777777777 \end{array} \qquad\qquad \begin{array}{r} 12345679 \\ 36 \\ \hline 74074074 \\ 37037037 \\ \hline 444444444 \end{array}$$

16. The result will always be 2. For example, if the number first selected is 7 the computation will be as follows:

$7 + 5 = 12.\ 3 \times 12 = 36.\ 36 - 9 = 27.\ 27 \div 3 = 9.\ 9 - 7 = 2.$

If the number first selected is 15 the computation will be:

$15 + 5 = 20.\ 3 \times 20 = 60.\ 60 - 9 = 51.\ 51 \div 3 = 17.\ 17 - 15 = 2.$

INSTANTANEOUS ADDITION

17. First have your friend write his three numbers. Now the two numbers which you write are determined by two of the three numbers which your friend has written.

For example, suppose that your friend's 3 numbers are as shown at the right. When you are writing your first number look at the second number which he wrote (2697) and write whatever added to each of the figures of this number in turn makes 9. Since the first figure of his number is 2, you write 7 as the first figure of your number since 2 +7 = 9. Since the second figure of his number is 6, you write 3, since 6 + 3 = 9. Write 0 for the third figure of your number, since 9 + 0 = 9, and write 2 as the fourth figure of your number since 7 + 2 = 9.

$$\begin{array}{l}\left.\begin{array}{r}7483\\2697\\8514\end{array}\right\}\text{friend's numbers}\\ \begin{array}{r}7302\\1485\\ \hline 27481\end{array}\end{array}$$

When you write your second number look at his third number (8514) and write whatever added to 8, 5, 1, and 4 will in each case make 9. Your second number is therefore, 1485.

You are now ready to write instantly the sum of the five numbers. To do this proceed as follows: First write a "2", then copy all of your friends first number (7483) except the last figure. Instead of writing the last figure, subtract 2 from it, and write this result. In the case above you write as your answer, 27481.

Notice that if your friend's first number had been 7481 you could not have subtracted 2 from 1, so you would take 2 from 81, the last two figures, and get for the final answer, 27479.

The two illustrations below will help you to understand this trick even more clearly.

Suppose your friend writes the first 3 numbers shown in either A or B below:

$$\begin{array}{ll}\text{A} & \text{B}\\ \left.\begin{array}{r}37468\\76952\\89437\end{array}\right\}\text{friend's numbers} & \left.\begin{array}{r}8756431\\2695384\\7839652\end{array}\right\}\text{friend's numbers}\\ \left.\begin{array}{r}23047\\10562\end{array}\right\}\text{your numbers} & \left.\begin{array}{r}7304615\\2160347\end{array}\right\}\text{your numbers}\\ \hline 237466 & 28756429\end{array}$$

You first write 23047, since each figure of your number when added to his second number must give 9. For the same reason your second number must, when added to his third number, gives 99999. Therefore, you write 10562.

Your answer for the entire sum is, therefore, 237466. In the same way the sum of the five numbers under B is found to be 28756429.

18.

a. The number 120 is equal to one-half the sum of the following numbers which are its exact divisors:

1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, and 60.

b. The number 672 is equal to one-half the sum of the following numbers which are its exact divisors:

1, 2, 3, 4, 6, 7, 8, 12, 14, 16, 21, 24, 28, 32, 42, 48, 56, 84, 96, 112, 168, 224, 336.

19. There is no dirt in a hole.

20.	7483	21.	4887	22.	292
	274		3964		7042
	8506		8732		3279
	9258		7689		8785
	25521		25272		19398

23.	4876	24.	7984	25.	7598
	327		527		345
	34132		55888		37990
	9752		15968		30392
	14628		39920		22794
	1594452		4207568		2621310

26. $$\begin{array}{r} 84987 \\ -32798 \\ \hline 52189 \end{array}$$

27. $$\begin{array}{r} 7864 \\ -3297 \\ \hline 4567 \end{array}$$

28. $$\begin{array}{r} 8756 \\ -3980 \\ \hline 4776 \end{array}$$

29. No matter what number your friend first selected, his answer will always be 5.

30. Any number × zero = zero. Therefore,

$$3 \div 3 \div 3 \div 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 0 = 0.$$

In the same way

$$4 \div 4 \div 4 \div 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 0 = 0.$$

31.
$$\begin{array}{ll} 12345 & \times 9 + 5 = 111110 \\ 123456 & \times 9 + 6 = 1111110 \\ 1234567 & \times 9 + 7 = 11111110 \\ 12345678 & \times 9 + 8 = 111111110 \end{array}$$

32.
$$\begin{array}{ll} 12345 & \times 9 + 6 = 111111 \\ 123456 & \times 9 + 7 = 1111111 \\ 1234567 & \times 9 + 8 = 11111111 \\ 12345678 & \times 9 + 9 = 111111111 \end{array}$$

33.
$$\begin{array}{ll} 12345 & \times 8 + 5 = 98765 \\ 123456 & \times 8 + 6 = 987654 \\ 1234567 & \times 8 + 7 = 9876543 \\ 12345678 & \times 8 + 8 = 98765432 \end{array}$$

34. Multiplication and division must always be performed before addition and subtraction. Therefore, $4 + 4 \times 4 - 4 \div 4 - 4 = 4 + 16 - 1 - 4 = 15$.

35. $5 \div 5 \div 5 \div 5 \div 5 \times 0 = 0$.

36. $5 \div 5 \div 5 \div 5 \div 5 \div \frac{1}{5} \div \frac{1}{5} \div \frac{1}{5} = 1$.

37.

8	1	6
3	5	7
4	9	2

OR

4	9	2
3	5	7
8	1	6

Other arrangements are also possible.

38.

16	2	3	13
5	11	10	8
9	7	6	12
4	14	15	1

Other arrangements are also possible.

39.

17	24	1	8	15
23	5	7	14	16
4	6	13	20	22
10	12	19	21	3
11	18	25	2	9

OR

11	24	7	20	3
4	12	25	8	16
17	5	13	21	9
10	18	1	14	22
23	6	19	2	15

Other arrangements are also possible.

40.

35	1	6	26	19	24
3	32	7	21	23	25
31	9	2	22	27	20
8	28	33	17	10	15
30	5	34	12	14	16
4	36	29	13	18	11

Other arrangements are also possible.

41. $55\frac{5}{5} = 56$.

THE MAGIC TABLES

42. Each of the six groups of numbers has a key number. The key numbers for the groups are as follows:

Group	Key Number	Group	Key Number
I	1	IV	8
II	2	V	16
III	4	VI	32

If a person says, "My number is found in Group I, III, and IV", you add the key numbers of these groups. 1 + 4 + 8 = 13. You know, therefore, that his number is 13.

If a person says, "My number is found in Group II, III, V, and VI", you add the key numbers of these four groups. 2 + 4 + 16 + 32 = 54. You know, therefore, that his number is 54.

If he says, "My number is found in Groups I, III, IV, V, and VI", you know that the number must be 1 + 4 + 8 + 16 + 32 or 61.

43. No matter what number your friend first selected, his answer will always be 17.

44. Yes.

45. A pound of feathers. This is true because feathers are weighed by the Avoirdupois pound which contains 7000 grains while gold is weighed by the Troy pound which contains only 5760 grains.

46. The answer will always be 6.

47. The answer will always be 2.

48. Since any number multiplied by zero gives zero, therefore, $9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 \times 0 = 0$.

49. All will have the same answer. It will always be 198.

50. He had 7 cookies at first.

51. *a.* 4. *b.* 8.

52. Nine minutes. The tenth piece will not need to be cut.

53. No; No; No.

54. First number is 987654321
Second number is 123456789
Difference is 864197532

55. Subtract one half the number that you told him to add and the remainder will be twice the number thought of.

56. First fill the 3-gallon measure with water and then pour the water from it into the five-gallon measure. Then fill the 3-gallon measure again and pour water from it into the 5-gallon measure until the 5-gallon measure is full. The 3-gallon measure will then contain 1 gallon. Now empty the 5-gallon measure, then pour the 1-gallon from the 3-gallon measure into the 5-gallon measure. Fill the 3-gallon measure and pour the 3 gallons from it into the 5-gallon measure. The 5-gallon measure will then contain just 4 gallons.

57. First number, 657: second number, 438: third number, 219.

58. The answer will always be 3087.

59. The ball cost 75 cents. The bat cost 50 cents.

60. Suppose that your friend writes the five numbers shown below:

$$\left.\begin{array}{l}7483\\2768\\1506\\3987\\6495\end{array}\right\}\text{Friend's Numbers}$$

$$\left.\begin{array}{l}2516\\7231\\8493\\6012\\3504\end{array}\right\}\text{Your Numbers}$$

When you write your first number, look at your friend's first number and write whatever added to each of his figures makes 9. His first number is 7483 so you write 2516 since $7 + 2 = 9$; $4 + 5 = 9$; $8 + 1 = 9$; and $3 + 6 = 9$. Look at his second number and do likewise. Similarly for his 3rd and 4th numbers. The sum of the 10 numbers will always be 5×9999 which is 49995.

61. If the sum is an even number, he held the even number of objects in his right hand. If the sum is an odd number, he held the odd number of objects in his right hand.

62. Subtract the sum which your friend gives you from the next larger number which exactly contains 9. The remainder is the number that he crossed out. For example, if he says, "My sum is 13, you subtract 13 from 18 and get 5. He crossed out 5.

63. At the beginning of the thirteenth day the snail will be 4 feet from the top of the well. Since it goes up 4 feet that day, it will reach the top on the thirteenth day.

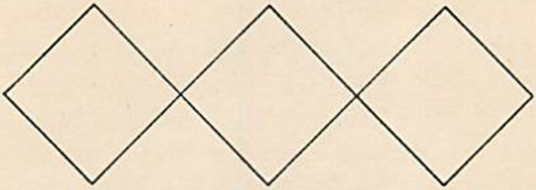
64. Neither. When the trains *meet* they will be at the same distance from New York.

65. $5\frac{1}{3}$.

66. When going to the office he drove 1 mile in $\frac{1}{25}$ of an hour. When returning he drove 1 mile in $\frac{1}{35}$ of an hour.

His average time per mile for the round trip is $\frac{1}{2}$ of the sum of $\frac{1}{25}$ of an hour and $\frac{1}{35}$ of an hour or $\frac{6}{175}$ of an hour. Therefore, his average rate was $\frac{175}{6}$ or $29\frac{1}{6}$ miles an hour.

67.



68. The blacksmith would cut each of the three links of one of the pieces and would use these three links to connect the four other pieces. Therefore, the cost for cutting the links would be 12 cents, and the cost for welding would be 15 cents. The total cost would be 27 cents.

69.	37	37	37	37	37	37	37	37	37
	3	6	9	12	15	18	21	24	27
	111	222	333	444	555	666	777	888	999

70. Add the figures of the number which your friend writes. Subtract this sum from the next larger number which exactly contains 9.

The difference is the figure which you write either just before or after his number.

For example, suppose that your friend writes 943681. The sum of the figures of this number is 31. The next larger number which exactly contains 9 is 36. 36 — 31 is 5. Therefore, you write 5 either just before or just after his number and you have 5943681 or 9436815. Both of these numbers are exactly divisible by 9.

71. Add the figures of the number which your friend has written. If the sum is an exact multiple of 9 then the number first written contains 9 without a remainder. If the sum does not exactly contain 9, the remainder when the sum is divided by 9 is the same as when the entire number is divided by 9.

72. Add the digits in the odd numbered places of your friend's number, then add those in the even numbered places and subtract these sums. If the remainder is 0 or 11 or 22 or any other multiple of 11, the number which was first written is exactly divisible by 11, otherwise it is not.

For example, if the number first written was 7 4 3 8 2 6 9, you add 9, 2, 3, and 7. The sum is 21. Then add 6, 8, and 4. The sum is 18. 21 — 18 = 3. Therefore, 7438269 is not divisible by 11 without a remainder.

If the number first written was 3 8 7 9 4 1 4, the difference between 4 + 4 + 7 + 3 and 1 + 9 + 8 is 0, therefore, 3879414 is divisible by 11 without a remainder.

73. From the sum subtract 25. The remainder will be a number of two figures. The left-hand figure will be the number on the first dice and the right-hand figure will be the number on the other dice. The left-hand figure will be the number which he multiplied by 2.

74. From whatever result your friend gives you subtract 14. This will at once give you the two right-hand figures of the year of his birth. You know the left-hand figures so you know the exact year of his birth.

For example, if when you subtract 14 from the result which your friend gives you, you get a remainder of 92, you know that the year of your friend's birth was 1892. If you get a remainder of 17 you know that the year of his birth was 1917. If you get a remainder of zero, you know that the year of his birth was 1900.

75. There is more than one possible arrangement.

2	1	9
4	3	8
6	5	7

OR

1	9	2
3	8	4
5	7	6

76. The next three lines are:

$$\begin{aligned} 1111111 \times 1111111 &= 1234567654321 \\ 11111111 \times 11111111 &= 123456787654321 \\ 111111111 \times 111111111 &= 12345678987654321 \end{aligned}$$

77. The next five lines are:

$$\begin{aligned} 9 \times 9876 + 4 &= 88888 \\ 9 \times 98765 + 3 &= 888888 \\ 9 \times 987654 + 2 &= 8888888 \\ 9 \times 9876543 + 1 &= 88888888 \\ 9 \times 98765432 + 0 &= 888888888 \end{aligned}$$

78.

$$\begin{aligned} 12345679 \times 45 &= 555\,555\,555 \\ 12345679 \times 54 &= 666\,666\,666 \\ 12345679 \times 63 &= 777\,777\,777 \\ 12345679 \times 72 &= 888\,888\,888 \\ 12345679 \times 81 &= 999\,999\,999 \end{aligned}$$

79. $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 64$

$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 81$

80.

$$\begin{aligned} (111111)^2 &= 12345654321 \\ (1111111)^2 &= 1234567654321 \end{aligned}$$

81. Any answer such as $3\frac{3}{3}$ or $5\frac{5}{5}$ or $7\frac{7}{7}$ is correct.

82. Use Roman symbols. XXIX is 29 and if the symbol representing 1 be taken away you have left XXX which is 30.

83.

15	54	49	12	13	56	51	10
63	3	8	61	4	57	6	58
42	22	41	21	20	48	19	47
26	30	32	36	37	33	35	31
39	38	40	28	29	25	27	34
18	43	17	44	45	24	46	23
2	59	64	5	60	1	62	7
55	11	9	53	52	16	14	50

84. Add 1 to the last number, this gives 20. Divide by 2, this gives 10. Multiply this result by itself, this gives 100, which is the sum.

If the last number had been 27, the sum would have been 196.

$27 + 1 = 28$ $28 \div 2 = 14$ $14 \times 14 = 196$

85. Add 1 to the last number, this gives 16. Divide by 2, this gives 8. Multiply this number by itself, this gives 64. Multiply this result by 2, this gives 128. From this subtract the number which you multiplied by itself, 8. The result is 120 and this is the sum.

If the last number had been 27, the sum would have been 378.

$27 + 1 = 28$ $28 \div 2 = 14$ $14 \times 14 = 196$

$2 \times 196 = 392$ $392 - 14 = 378$

86. There is more than one way.

3	2	7
6	5	4
9	8	1

OR

2	7	3
5	4	6
8	1	9

In the following answers, "S" stands for spades, "H" for hearts, "D" for diamonds, and "C" for clubs. For example, A (S) means Ace of Spades, and 7 (H) means 7 of Hearts.

87. First arrange the cards in the following sequence:

A (S), Q (S), A (H), J (S), A (D), Q (H), A (C), J (D), K (S), Q (D), K (H), J (H), K (D), Q (C), K (C), J (C).

88. First arrange the cards in the following sequence:

A (S), 8 (H), A (H), 2 (S), K (S), 7 (S), K (H), 4 (S), Q (S), 7 (H), Q (H), 3 (H), J (S), 6 (S), J (H), 4 (H), 10 (S), 6 (H), 10 (H), 2 (H), 9 (S), 5 (S), 9 (H), 3 (S), 8 (S), 5 (H).

89. First arrange the cards in the following sequence:

A (S), A (D), K (S), A (C), Q (S), K (D), J (S), 3 (C),
10 (S), Q (D), 9-(S), K (C), 8 (S), J (D), 7 (S), 7 (C),
6 (S), 10 (D), 5 (S), Q (C), 4 (S), 9 (D), 3 (S), 4 (C),
2 (S), 8 (D), A (H), J (C), K (H), 7 (D), Q (H), 6 (C),
J (H), 6 (D), 10 (H), 10 (C), 9 (H), 5 (D), 8 (H), 2 (C),
7 (H), 4 (D), 6 (H), 9 (C), 5 (H), 3 (D), 4 (H), 5 (C),
3 (H), 2 (D), 2 (H), 8 (C).

90. No matter what number your friend first chose, he will always get 10890 as his final result.

91. Thirty-six pounds.

92. First tap over the number 7, then over the number 6, then over 5, etc. around the face of the watch. The number you have reached when he says "Stop" will be the very one that he selected.

93. If your friend made 4 piles, count the cards left in the pack, and that number will be the total number of points on the bottom cards of the piles.

If he made more than 4 piles, add 13 to the number of cards remaining and this will be the total number of points on the bottom cards of the piles.

If he made less than 4 piles, subtract 13 from the number of cards left and this will be the number of points on the bottom cards.

For example, if the friend put down face up a 7, 10, and ace, he then counts out 5 cards on top of the 7. He places 2 cards on the 10 and 11 on the ace. There will then be 31 cards left in the deck. Since he made less than 4 piles, subtract 13 from 31 getting 18. This is the number of points on the three bottom cards 7, 10, and ace.

If your friend made 5 piles and if the bottom cards of the piles were a 3, 7, 8, 10, and king, the number of cards left in the deck would be 25. Add 13 to 25 and the sum is 38. This is the sum of the points on the bottom cards.

94. $1 + 2 + 3 + 4 + 5 + 6 + 7 + (8 \times 9) = 100$.

95.

$$\begin{array}{r}
87 \\
76\,\overline{)\,6612} \\
608 \\
\hline
532 \\
532 \\
\hline
\end{array}$$

96.

$$\begin{array}{r}
42 \\
327\,\overline{)\,13734} \\
1308 \\
\hline
654 \\
654 \\
\hline
\end{array}$$

97.

$$\begin{array}{r}
738 \\
52 \\
\hline
1476 \\
3690 \\
\hline
38376
\end{array}$$

98.

$$\begin{array}{r}
403 \\
28\,\overline{)\,11284} \\
112 \\
\hline
84 \\
84 \\
\hline
\end{array}$$

99.

$$\begin{array}{r}
5809 \\
-2649 \\
\hline
3160
\end{array}$$

100.

$$\begin{array}{r}
8009 \\
58 \\
\hline
64072 \\
40045 \\
\hline
464522
\end{array}$$

101.

$$\begin{array}{r}
38 \\
50\,\overline{)\,1900} \\
150 \\
\hline
400 \\
400 \\
\hline
\end{array}$$

102.

$$\begin{array}{r}
63 \\
748\,\overline{)\,47124} \\
4488 \\
\hline
2244 \\
2244 \\
\hline
\end{array}$$

103.

$$\begin{array}{r} 568 \\ 754 \\ 573 \\ 96 \\ \hline 1991 \end{array}$$

104.

$$\begin{array}{rr} & 74 \\ \cline{2-2} 89 & \big)\,6586 \\ & 623 \\ \cline{2-2} & 356 \\ & 356 \\ \cline{2-2} \end{array}$$

105.

$$\begin{array}{r} 348 \\ 35 \\ \hline 1740 \\ 1044 \\ \hline 12180 \end{array}$$

106.

$$\begin{array}{r} 384 \\ 26 \\ \hline 2304 \\ 768 \\ \hline 9984 \end{array}$$

107. One-half.

108. Sixty-five.

EASY TRICKS
WITH
NUMBERS

FOR AGES 9 TO 90

108 TRICKS